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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/646,264

08/22/2003

Bradley R. Johnson

50005-114

9466

32215

7590

05/12/2006

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EXAMINER

TUROC, DAVID P

ART UNIT

PAPER NUMBER

1762

DATE MAILED: 05/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/646,264

Applicant(s)

JOHNSON ET AL.

Examiner

David Turocy

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 20-22, 41-43 and 45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21-22 and 45 is/are allowed.
- 6) ☒ Claim(s) 20 and 41-43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

1. The applicant's amendments, filed 3/3/2006, have been fully considered and reviewed by the examiner. The examiner notes the amendment to claims 20, 21, 41, 42, and 45 to include the subject matter of all intervening claims as well as the cancellation of claims 1-19, 23-40, and 44. Claims 20-22, 41-43 and 45 remain pending in the instant application.

### ***Allowable Subject Matter***

2. The indicated allowability of claims 20 and 41-43 is withdrawn in view of the newly discovered reference(s) to Dubrow. Rejections based on the newly cited reference(s) follow.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6159831 by Thrush et al. hereafter Thrush in view of US Patent 528295 by Winter et al, hereafter Winter and further in view of US Patent Publication 2004/0206448 by Dubrow et al., hereafter Dubrow.

Thrush teaches a method of forming chalcogenide nanowires by condensing a chalcogenide vapor to form a nanowire of a chalcogenide on a preselect portion of the base (Column 1, line 65 – Column 2, line 11, Column 6, lines 1-10). Thrush fails to disclose vaporizing bulk chalcogenide.

However, Winter, teaches forming a solid single source chalcogenide and heating the precursor to sublime the chalcogenide solid to produce a vapor for formation of a chalcogenide film (abstract, figures). Winter discloses providing a pressure less than atmospheric for the process where the vapor and the substrate are in fluid communication (abstract, figure). Winter discloses subliming the correct stoichiometry of the desired coating in order to reduce waste materials (Column 1, lines 40-50). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Thrush to use the continuous sublimation of a single source chalcogenide as suggested by Winter to provide a desirable chalcogenide vapor for formation of nanowires because Winter discloses subliming the solid precursor in the

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appropriate stoichiometry to minimize waste is known in the art to provide vapors for depositing a chalcogenide and therefore would reasonably be expected to effectively provide chalcogenide vapors for formation of nanowires.

Thrush in view of Winter fails to disclose depositing the chalcogenide nanowire on a biocompatible implant.

However, Dubrow, teaching of a method for joining and adhering materials, discloses applying various nanowires, including chalcogenide nanowires, to medical implants in order to attach the implant to bones and or teeth (paragraphs 0009, 0087).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Thrush in view of Winter to use the medical implant substrate as suggested by Dubrow to provide a desirable adhesive coating on a medical implant with a reasonable expectation of success because Dubrow discloses nanowires on medical devices are known in the art to provide adhesion to bones and/or teeth. The prior art can be modified or combined to reject claims as prima facie obvious as long as there is a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375.

6. Claims 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thrush in view of Winter and Dubrow and further in view of the admitted state of the art as taught by the applicants description.

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Thrush in view of Winter and Dubrow teaches of forming nanowires of a semiconductor material, such as a chalcogenide material, on medical implants but fails to explicitly disclose forming nanowires of a semiconductor material comprising arsenic and sulfur in the ratio as claimed.

However, the admitted state of the art discloses semiconductor materials include many chalcogenide glasses, such as As-S, As-Se, As-S-Se, etc. and such materials are useful in a variety of applications (Pages 1-2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Thrush in view of Winter and Dubrow to use the semiconductor materials as suggested by the admitted state of the art to provide a desirable nanowires because Thrush in view of Winter and Dubrow discloses forming nanowires from a variety of semiconductor materials and the admitted state of the art discloses known and useful semiconductor materials and one would therefore reasonably be expected to effectively provide an As-S nanowires using the process as taught by Thrush in view of Winter and Dubrow.

In regard to the claimed ratio, it is the examiners position that the molar ratio of two components of a compound is known result effective variable, where the ratio of components is directly related to the compounds properties including stability and reactivity.

Therefore it would have been obvious to one skill in the art at the time of the invention was made to determine the optimal value for the ratio of arsenic and chalcogenide used in the process of Thrush in view of Winter and Dubrow and further in

view of the admitted state of the art through routine experimentation, to impart the compound with the desired properties.

***Allowable Subject Matter***

7. Claims 21-22 and 45 are allowed.
8. The following is a statement of reasons for the indication of allowable subject matter: None of the prior art cited or reviewed by the examiner alone or in combination teaches or reasonably suggests growing the chalcogenide nanowires on optical fibers.

***Conclusion***

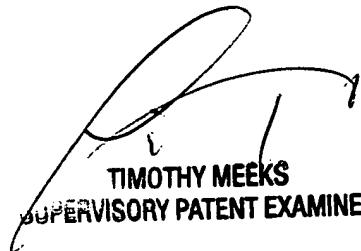
Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Turocy whose telephone number is (571) 272-2940. The examiner can normally be reached on Monday-Friday 8:30-6:00, No 2nd Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Turocy  
AU 1762



**TIMOTHY MEEKS**  
**SUPERVISORY PATENT EXAMINER**